

Naval Medical Center Portsmouth (NMCP) COVID-19 Literature Report

#98: Friday, 22 July 2022

ANNOUNCEMENT: The NMCP COVID-19 Literature Report has been produced since March 2020. These reports have taken significant time and effort to produce, often at the cost of other demands. **These reports will stop with #100 on 19 August 2022.** I hope they have been of value. Archived reports will be available [online](#) and through the [Medical Heritage Library](#) and [BUMED's Office of Medical History collection](#) at archive.org.

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Purpose: These reports, published every other week on Fridays, are curated collections of current research, special reports, and news regarding the COVID-19 pandemic that may be of interest to medical providers, leadership, and decision makers. All reports are available online at <https://nmcp.libguides.com/covidreport>.

Disclaimer: I am not a medical professional. This document is current as of the date noted above. While I make every effort to find and summarize available data, I cannot cover everything in the literature on COVID-19. Due to the rapid evolution of the literature, I will not update past reports when new information arises; for retracted papers specific to COVID-19, see the [list of retracted papers from Retraction Watch](#).

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The Big Picture

News in Brief

"HHS extends public health emergency for COVID-19" ([CIDRAP](#)).

"WHO warns covid 'nowhere near over' as variants spike in U.S., Europe" ([WP](#)).

"The power imbalance undermining global health — A landmark deal between rich and poor countries was supposed to help end the pandemic. It has done nothing of the sort" ([Atlantic](#)).

Preparedness

"Officials reorganize HHS to boost pandemic response" ([WP](#)).

"Why disasters are getting more severe but killing fewer people" ([Vox](#)).

"COVID-19 pandemic fuels largest continued backslide in vaccinations in three decades" ([WHO](#)).

Antibiotic Resistance

"As Big Pharma loses interest in new antibiotics, infections are only growing stronger" ([KHN](#)).

"How the pandemic screwed up our antibiotics — Antibiotic resistance was already a crisis. Covid-19 made it an emergency" ([Vox](#); see also: CDC special report noted below).

Special Reports and Other Resources

CDC: [COVID-19: U.S. Impact on Antimicrobial Resistance, Special Report 2022 \[pdf\]](#) (July 2022)

"CDC's new report discusses changes in healthcare settings and other consequences of the pandemic that have worsened antimicrobial resistance in the US. The report focuses on COVID-19's impacts on tracking and data, preventing infections, antibiotic use, environment and sanitation, and vaccines, diagnostics, and therapeutics. It finds that there was an increase of at least 15% from 2019 to 2020 in resistant infections starting during hospitalization, also noting that 'Because of pandemic impacts, 2020 data are delayed or unavailable for 9 of the 18 antimicrobial resistance threats.' It also provides an outlook and recommendations for the future of building public health capacity for antimicrobial resistance."

Summary from: [The Pandora Report 7.15.2022](#)

DOD: [Strengthening Food Security in the Force: Strategy and Roadmap \[pdf\]](#) (July 2022)

"On March 4, 2021, Secretary of Defense Lloyd J. Austin III released a message to the Force outlining his three key priorities: defend the Nation, take care of our people, and succeed through teamwork. To ensure the United States remains the world's greatest fighting Force,

the Department of Defense (DoD) must continue to focus on ways to improve how we take care of our people.

In November 2021, Secretary Austin released a memorandum addressing economic security in the Force, and acknowledged challenges facing some of our Service members and families. Secretary Austin ordered immediate actions to address the issue as an initial step. He approved temporary increases of Basic Allowance for Housing (BAH) in high cost areas, extensions for Temporary Lodging Expenses (TLE), and the creation of the Military OneSource Military Leader's Economic Security Toolkit. He also directed actions that will enable the Department to address economic challenges over the long-term, including the development of a strategy and implementation roadmap dedicated to strengthening food security in the Force.

Challenges stemming from economic security manifest themselves in a number of ways, including reports of food insecurity. Food insecurity is commonly defined as when a person or a household does not have enough nutritious food to live an active, healthy life, and can range from relying on cheaper, less-nutritious foods to skipping meals.

This strategy and roadmap outlines a plan to address food insecurity, delivering a holistic approach that starts with an effort to understand the experiences of Service members and their families. These evidence-informed actions address a breadth of issues, and include goals across six lines of effort designed to: 1) increase access to healthy food, 2) enhance spouse economic opportunities, 3) review Service member pay and benefits, 4) reinforce financial resources and awareness, 5) encourage Service members and families to seek available resources and services, and 6) expand data collection and reporting."

COVID-19 Vaccines

News in Brief

"FDA authorizes Novavax Covid vaccine, in hopes the traditional shot will convince holdouts" ([STAT](#): see also: [FDA statement](#)).

"New COVID vaccines will be ready this fall. America won't be" ([Atlantic](#)).

Journal Articles

MMWR: [Effectiveness of 2, 3, and 4 COVID-19 mRNA Vaccine Doses Among Immunocompetent Adults During Periods when SARS-CoV-2 Omicron BA.1 and BA.2/BA.2.12.1 Sublineages Predominated — VISION Network, 10 States, December 2021–June 2022](#) (22 July 2022)

"What is already known about this topic? Little is known about COVID-19 vaccine effectiveness (VE) during the Omicron variant BA.2/BA.2.12.2–predominant period or VE of a fourth COVID-19 vaccine dose in persons aged ≥ 50 years.

What is added by this report? VE during the BA.2/BA.2.12.2 period was lower than that during the BA.1 period. A third vaccine dose provided additional protection against moderate and severe COVID-19–associated illness in all age groups, and a fourth dose provided additional protection in eligible adults aged ≥ 50 years.

What are the implications for public health practice? Immunocompetent persons should receive recommended COVID-19 booster doses to prevent moderate to severe COVID-19, including a first booster dose for all eligible persons and second dose for adults aged ≥ 50 years at least 4 months after an initial booster dose. Booster doses should be obtained immediately when persons become eligible."

Cell Rep Med: [Rapid decline in vaccine-boosted neutralizing antibodies against SARS-CoV-2 Omicron variant](#) (19 July 2022)

"The Omicron variant of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) exhibits reduced susceptibility to vaccine-induced neutralizing antibodies, requiring a boost to generate protective immunity. We assess the magnitude and short-term durability of neutralizing antibodies after homologous and heterologous boosting with mRNA and Ad26.COV2.S vaccines. All prime-boost combinations substantially increase the neutralization titers to Omicron, although the boosted titers decline rapidly within 2 months from the peak response compared with boosted titers against the prototypic D614G variant. Boosted Omicron neutralization titers are substantially higher for homologous mRNA vaccine boosting, and for heterologous mRNA and Ad26.COV2.S vaccine boosting, compared with homologous Ad26.COV2.S boosting. Homologous mRNA vaccine boosting generates nearly equivalent neutralizing activity against Omicron sublineages BA.1, BA.2, and BA.3 but modestly reduced neutralizing activity against BA.2.12.1 and BA.4/BA.5 compared with BA.1. These results have implications for boosting requirements to protect against Omicron and future variants of SARS-CoV-2."

Sci Adv: [Investigating trends in those who experience menstrual bleeding changes after SARS-CoV-2 vaccination](#) (15 July 2022)

"Early in 2021, many people began sharing that they experienced unexpected menstrual bleeding after SARS-CoV-2 inoculation. We investigated this emerging phenomenon of changed menstrual bleeding patterns among a convenience sample of currently and formerly menstruating people using a web-based survey. In this sample, 42% of people with regular menstrual cycles bled more heavily than usual, while 44% reported no change after being vaccinated. Among respondents who typically do not menstruate, 71% of people on long-acting reversible contraceptives, 39% of people on gender-affirming hormones, and

66% of postmenopausal people reported breakthrough bleeding. We found that increased/breakthrough bleeding was significantly associated with age, systemic vaccine side effects (fever and/or fatigue), history of pregnancy or birth, and ethnicity. Generally, changes to menstrual bleeding are not uncommon or dangerous, yet attention to these experiences is necessary to build trust in medicine."

Vaccine: [Risk of Myocarditis and Pericarditis Following BNT162b2 and mRNA-1273 COVID-19 Vaccination](#) (12 July 2022)

"Background: Evidence indicates that mRNA COVID-19 vaccination is associated with risk of myocarditis and possibly pericarditis, especially in young males. It is not clear if risk differs between mRNA-1273 versus BNT162b2. We assessed if risk differs using comprehensive health records on a diverse population.

Methods: Members 18-39 years of age at eight integrated healthcare-delivery systems were monitored using data updated weekly and supplemented with medical record review of myocarditis and pericarditis cases. Incidence of myocarditis and pericarditis events that occurred among vaccine recipients 0 to 7 days after either dose 1 or 2 of a messenger RNA (mRNA) vaccine was compared with that of vaccinated concurrent comparators who, on the same calendar day, had received their most recent dose 22 to 42 days earlier. Rate ratios (RRs) were estimated by conditional Poisson regression, adjusted for age, sex, race and ethnicity, health plan, and calendar day. Head-to-head comparison directly assessed risk following mRNA-1273 versus BNT162b2 during 0–7 days post-vaccination.

Results: From December 14, 2020 – January 15, 2022 there were 41 cases after 2,891,498 doses of BNT162b2 and 38 cases after 1,803,267 doses of mRNA-1273. Cases had similar demographic and clinical characteristics. Most were hospitalized for ≤ 1 day; none required intensive care. During days 0–7 after dose 2 of BNT162b2, the incidence was 14.3 (CI: 6.5 – 34.9) times higher than the comparison interval, amounting to 22.4 excess cases per million doses; after mRNA-1273 the incidence was 18.8 (CI: 6.7 – 64.9) times higher than the comparison interval, amounting to 31.2 excess cases per million doses. In head-to-head comparisons 0–7 days after either dose, risk was moderately higher after mRNA-1273 than after BNT162b2 (RR: 1.61, CI 1.02 – 2.54).

Conclusions: Both vaccines were associated with increased risk of myocarditis and pericarditis in 18-39-year-olds. Risk estimates were modestly higher after mRNA-1273 than after BNT162b2."

Transmission, Exposure, and Surveillance

News in Brief

"As the BA.5 variant spreads, the risk of coronavirus reinfection grows" ([WP](#)).

"Is BA.5 the 'reinfection wave'? The latest surge is a test of our pandemic priorities" ([Atlantic](#)).

"BA.5 doesn't care that you just had Covid-19 — The omicron subvariant is tuned to evade immunity, even from previous omicron infections" ([Vox](#)).

"Prior Omicron infection protects against BA.4 and BA.5 variants" ([Nature](#)).

Journal Articles

PLoS Med: [Global influenza surveillance systems to detect the spread of influenza-negative influenza-like illness during the COVID-19 pandemic: Time series outlier analyses from 2015–2020](#) (19 July 2022)

"Background: Surveillance systems are important in detecting changes in disease patterns and can act as early warning systems for emerging disease outbreaks. We hypothesized that analysis of data from existing global influenza surveillance networks early in the COVID-19 pandemic could identify outliers in influenza-negative influenza-like illness (ILI). We used data-driven methods to detect outliers in ILI that preceded the first reported peaks of COVID-19.

Methods and findings: We used data from the World Health Organization's Global Influenza Surveillance and Response System to evaluate time series outliers in influenza-negative ILI. Using automated autoregressive integrated moving average (ARIMA) time series outlier detection models and baseline influenza-negative ILI training data from 2015-2019, we analyzed 8,792 country-weeks across 28 countries to identify the first week in 2020 with a positive outlier in influenza-negative ILI. We present the difference in weeks between identified outliers and the first reported COVID-19 peaks in these 28 countries with high levels of data completeness for influenza surveillance data and the highest number of reported COVID-19 cases globally in 2020. To account for missing data, we also performed a sensitivity analysis using linear interpolation for missing observations of influenza-negative ILI. In 16 of the 28 countries (57%) included in this study, we identified positive outliers in cases of influenza-negative ILI that predated the first reported COVID-19 peak in each country; the average lag between the first positive ILI outlier and the reported COVID-19 peak was 13.3 weeks (standard deviation 6.8). In our primary analysis, the earliest outliers occurred during the week of January 13, 2020, in Peru, the Philippines, Poland, and Spain. Using linear interpolation for missing data, the earliest outliers were detected during the weeks beginning December 30, 2019, and January 20, 2020, in Poland and Peru,

respectively. This contrasts with the reported COVID-19 peaks, which occurred on April 6 in Poland and June 1 in Peru. In many low- and middle-income countries in particular, the lag between detected outliers and COVID-19 peaks exceeded 12 weeks. These outliers may represent undetected spread of SARS-CoV-2, although a limitation of this study is that we could not evaluate SARS-CoV-2 positivity.

Conclusions: Using an automated system of influenza-negative ILI outlier monitoring may have informed countries of the spread of COVID-19 more than 13 weeks before the first reported COVID-19 peaks. This proof-of-concept paper suggests that a system of influenza-negative ILI outlier monitoring could have informed national and global responses to SARS-CoV-2 during the rapid spread of this novel pathogen in early 2020."

Sci Rep: [Bacterial and fungal isolation from face masks under the COVID-19 pandemic](#) (18 July 2022)

"The COVID-19 pandemic has led people to wear face masks daily in public. Although the effectiveness of face masks against viral transmission has been extensively studied, there have been few reports on potential hygiene issues due to bacteria and fungi attached to the face masks. We aimed to (1) quantify and identify the bacteria and fungi attaching to the masks, and (2) investigate whether the mask-attached microbes could be associated with the types and usage of the masks and individual lifestyles. We surveyed 109 volunteers on their mask usage and lifestyles, and cultured bacteria and fungi from either the face-side or outer-side of their masks. The bacterial colony numbers were greater on the face-side than the outer-side; the fungal colony numbers were fewer on the face-side than the outer-side. A longer mask usage significantly increased the fungal colony numbers but not the bacterial colony numbers. Although most identified microbes were non-pathogenic in humans; *Staphylococcus epidermidis*, *Staphylococcus aureus*, and *Cladosporium*, we found several pathogenic microbes; *Bacillus cereus*, *Staphylococcus saprophyticus*, *Aspergillus*, and *Microsporum*. We also found no associations of mask-attached microbes with the transportation methods or gargling. We propose that immunocompromised people should avoid repeated use of masks to prevent microbial infection."

Emerg Infect Dis: [Correlation between Clinical and Wastewater SARS-CoV-2 Genomic Surveillance, Oregon, USA](#) (15 July 2022)

"SARS-CoV-2 variant proportions in a population can be estimated through genomic sequencing of clinical specimens or wastewater samples. We demonstrate strong pairwise correlation between statewide variant estimates in Oregon, USA, derived from both methods (correlation coefficient 0.97). Our results provide crucial evidence of the effectiveness of community-level genomic surveillance."

JAMA: [Association of Omicron vs Wild-type SARS-CoV-2 Variants With Hospital-Onset SARS-CoV-2 Infections in a US Regional Hospital System](#) (15 July 2022)

"This retrospective hospital-based study examines all SARS-CoV-2 nosocomial infections in 1 US health care system during the Omicron surge vs an earlier wave when wild-type variants predominated....

The Omicron surge was associated with a significant increase in hospital-onset SARS-CoV-2 infections compared with the prior winter surge. Possible reasons include the Omicron surge's very high community and health care worker incidence rates, as well as Omicron's greater contagiousness. Sources of nosocomial infections include health care workers, visitors, and other patients."

PNAS: [The durability of natural infection and vaccine-induced immunity against future infection by SARS-CoV-2](#) (15 July 2022)

"The durability of vaccine-mediated immunity to SARS-CoV-2, the durations to breakthrough infection, and the optimal timings of booster vaccination are crucial knowledge for pandemic response. Here, we applied comparative evolutionary analyses to estimate the durability of immunity and the likelihood of breakthrough infections over time following vaccination by BNT162b2 (Pfizer-BioNTech), mRNA-1273 (Moderna), ChAdOx1 (Oxford-AstraZeneca), and Ad26.COVS.2 (Johnson & Johnson/Janssen). We evaluated anti-Spike (S) immunoglobulin G (IgG) antibody levels elicited by each vaccine relative to natural infection. We estimated typical trajectories of waning and corresponding infection probabilities, providing the distribution of times to breakthrough infection for each vaccine under endemic conditions. Peak antibody levels elicited by messenger RNA (mRNA) vaccines mRNA-1273 and BNT162b2 exceeded that of natural infection and are expected to typically yield more durable protection against breakthrough infections (median 29.6 mo; 5 to 95% quantiles 10.9 mo to 7.9 y) than natural infection (median 21.5 mo; 5 to 95% quantiles 3.5 mo to 7.1 y). Relative to mRNA-1273 and BNT162b2, viral vector vaccines ChAdOx1 and Ad26.COVS.2 exhibit similar peak anti-S IgG antibody responses to that from natural infection and are projected to yield lower, shorter-term protection against breakthrough infection (median 22.4 mo and 5 to 95% quantiles 4.3 mo to 7.2 y; and median 20.5 mo and 5 to 95% quantiles 2.6 mo to 7.0 y; respectively). These results leverage the tools from evolutionary biology to provide a quantitative basis for otherwise unknown parameters that are fundamental to public health policy decision-making."

JAMA: [Updated US Infection- and Vaccine-Induced SARS-CoV-2 Seroprevalence Estimates Based on Blood Donations, July 2020-December 2021](#) (13 July 2022)

"This cross-sectional study examines monthly blood donations from individuals aged 16 years and older to estimate the population with antibodies to SARS-CoV-2 from infection or vaccination....

In this study of US blood donations, the combined seroprevalence from infection or vaccination reached 94.7% by December 2021. Despite this, record levels of infection and reinfections were reported as the Omicron variant became predominant in early 2022. The high infection rates are likely related to increased transmissibility and enhanced immune escape mutations of the Omicron variant, along with waning protection from previous vaccination and infection."

Treatments and Management

News in Brief

"The hunt for drugs for mild COVID: scientists seek to treat those at lower risk" ([Nature](#)).

"Doubting mainstream medicine, COVID patients find dangerous advice and pills online" ([NPR](#)).

Journal Articles

Hypertension: [Hypertension and Excess Risk for Severe COVID-19 Illness Despite Booster Vaccination](#) (20 July 2022)

"We conducted a retrospective cohort study of adults who received at least 3 mRNA vaccine doses but were subsequently treated for confirmed COVID-19 infection in our academic health care system during the Omicron surge onset in our region and had at least 2 outpatient visits within the preceeding 2 years....

Our findings reveal a persistent and marked associa-tion between hypertension and risk for severe COVID-19 illness, even among a fully vaccinated patient population."

NEJM: [Efficacy of Antibodies and Antiviral Drugs against Omicron BA.2.12.1, BA.4, and BA.5 Subvariants](#) (20 July 2022)

"In this study, we examined the neutralizing ability of FDA-approved monoclonal antibodies, individually and in combination, against omicron BA.2.12.1 (hCoV-19/USA/NY-MSHSP-PV56475/2022), BA.4 (hCoV-19/USA/MD/HP30386/2022), and BA.5 (hCoV-19/Japan/TY41-702/2022) isolates....

Overall, our data suggest that the three small-molecule antiviral drugs remdesivir, molnupiravir, and nirmatrelvir may have therapeutic value against the sublineages BA.2.12.1, BA.4, and BA.5 of SARS-CoV-2 omicron variants. Our data also indicate that bebtelovimab is effective against BA.2.12.1, BA.4, and BA.5."

JACC: [Association of Blood Viscosity With Mortality Among Patients Hospitalized With COVID-19](#) (18 July 2022)

"Background: Coronavirus disease-2019 (COVID-19) is characterized by a dysfunctional immune response and abnormal blood rheology that contribute to endothelial dysfunction and thrombotic complications. Whole blood viscosity (WBV) is a clinically validated measure of blood rheology and an established predictor of cardiovascular risk. We hypothesize that increased WBV is associated with mortality among patients hospitalized with COVID-19.

Objectives: This study sought to determine the association between estimated BV (eBV) and mortality among hospitalized COVID-19 patients.

Methods: The study population included 5,621 hospitalized COVID-19 patients at the Mount Sinai Health System from February 27, 2020, to November 27, 2021. eBV was calculated using the Walburn-Schneck model. Multivariate Cox proportional hazards models were used to evaluate the association between eBV and mortality. Considered covariates included age, sex, race, cardiovascular and metabolic comorbidities, in-house pharmacotherapy, and baseline inflammatory biomarkers.

Results: Estimated high-shear BV (eHSBV) and estimated low-shear BV were associated with increased in-hospital mortality. One-centipoise increases in eHSBV and estimated low-shear BV were associated with a 36.0% and 7.0% increase in death, respectively ($P < 0.001$).

Compared with participants in the lowest quartile of eHSBV, those in the highest quartile of eHSBV had higher mortality (adjusted HR: 1.53; 95% CI: 1.27-1.84). The association was consistent among multiple subgroups, notably among patients without any comorbidities (adjusted HR: 1.69; 95% CI: 1.28-2.22).

Conclusions: Among hospitalized COVID-19 patients, increased eBV is significantly associated with higher mortality. This suggests that eBV can prognosticate patient outcomes in earlier stages of COVID-19, and that future therapeutics aimed at reducing WBV should be evaluated."

JAMA Netw Open: [Effectiveness of Casirivimab-Imdevimab and Sotrovimab During a SARS-CoV-2 Delta Variant Surge: A Cohort Study and Randomized Comparative Effectiveness Trial](#) (14 July 2022)

"Question: Is monoclonal antibody (mAb) treatment effective in nonhospitalized patients with COVID-19 caused by the Delta variant?

Findings: In this propensity score–matched cohort study ($n = 3069$) and randomized comparative effectiveness trial ($n = 3558$), mAb treatment (casirivimab-imdevimab or sotrovimab) compared with no mAb treatment was associated with reduced hospitalization or death by 28 days, and sotrovimab compared with casirivimab-imdevimab resulted in 86%

probability of inferiority and 79% probability of equivalence in the odds of improvement in hospital-free days within 28 days after mAb treatment.

Meaning: Findings of this study suggest that casirivimab-imdevimab and sotrovimab were both associated with reduced risk of hospitalization or death and had similar effectiveness, although they did not meet the prespecified criteria for statistical inferiority or equivalence."

JAMA Intern Med: [Assessment of Racial and Ethnic Differences in Oxygen Supplementation Among Patients in the Intensive Care Unit](#) (11 July 2022)

"Question: Are there differences in supplemental oxygen administration among patients of different races and ethnicities associated with pulse oximeter performance discrepancies?

Findings: In this cohort study of 3069 patients in the intensive care unit, Asian, Black, and Hispanic patients had a higher adjusted time-weighted average pulse oximetry reading and were administered significantly less supplemental oxygen for a given average hemoglobin oxygen saturation compared with White patients.

Meaning: There were differences in supplemental oxygen administration between Asian, Black, and Hispanic patients and White patients that were associated with pulse oximeter performance and may contribute to racial and ethnic disparities in care."

Clin Infect Dis: [Secondary sclerosing cholangitis following COVID-19 disease: a multicenter retrospective study](#) (09 July 2022)

"Background: Secondary sclerosing cholangitis (SSC) is a rare disease with poor prognosis. Cases of SSC have been reported following coronavirus disease 2019 (COVID-19), COVID-SSC.

Aims: Aim of this study was to compare COVID-SSC to SSC in critically ill patients (SSC-CIP) and to assess factors influencing transplant-free survival.

Methods: In this retrospective, multicenter study involving 127 patients with SSC from 9 tertiary care centers in Germany, COVID-SSC was compared to SSC-CIP and logistic regression analyses were performed investigating factors impacting transplant-free survival.

Results: 24 patients had COVID-SSC, 77 patients SSC-CIP and 26 patients had other forms of SSC. COVID-SSC developed after a median of 91 days following COVID-19 diagnosis. All patients had received extensive intensive care treatment (median days of mechanical ventilation 48). Patients with COVID-SSC and SSC-CIP were comparable in most of the clinical parameters and transplant-free survival was not different from other forms of SSC ($P = 0.443$ in log-rank test). In the overall cohort, the use of ursodeoxycholic acid (UDCA, OR 0.36, 95%-CI 0.16-0.80, $P = 0.013$; $P < 0.001$ in log-rank test) and high serum albumin levels (OR 0.40, 95%-CI 0.17-0.96, $P = 0.040$) were independently associated with an increased

transplant-free survival, while the presence of liver cirrhosis (OR 2.52, 95%-CI 1.01-6.25, $P = 0.047$) was associated with worse outcome. MDRO colonization or infection did not impact patients' survival.

Conclusions: COVID-SSC and CIP-SSC share the same clinical phenotype, course of the disease and risk factors for its development. UDCA may be a promising therapeutic option in SSC, though future prospective trials need to confirm our findings."

Long COVID and Other Post-Infectious Findings

News in Brief

"1 million Americans have left the labor market because of long COVID. A House subcommittee will hear expert testimony today [19 July 2022]" ([Fortune](#); see also: [YouTube video from livestream](#)).

Long read: "How often is long covid happening? The answer isn't so easy to find" ([Gizmodo](#)).

Journal Articles

Neurotherapeutics: [Therapeutic Approaches to the Neurologic Manifestations of COVID-19](#) (21 July 2022)

"As of May 2022, there have been more than 527 million infections with severe acute respiratory disease coronavirus type 2 (SARS-CoV-2) and over 6.2 million deaths from Coronavirus Disease 2019 (COVID-19) worldwide. COVID-19 is a multisystem illness with important neurologic consequences that impact long-term morbidity and mortality. In the acutely ill, the neurologic manifestations of COVID-19 can include distressing but relatively benign symptoms such as headache, myalgias, and anosmia; however, entities such as encephalopathy, stroke, seizures, encephalitis, and Guillain–Barre Syndrome can cause neurologic injury and resulting disability that persists long after the acute pulmonary illness. Furthermore, as many as one-third of patients may experience persistent neurologic symptoms as part of a Post-Acute Sequelae of SARS-CoV-2 infection (Neuro-PASC) syndrome. This Neuro-PASC syndrome can affect patients who required hospitalization for COVID-19 or patients who did not require hospitalization and who may have had minor or no pulmonary symptoms. Given the large number of individuals affected and the ability of neurologic complications to impair quality of life and productivity, the neurologic manifestations of COVID-19 are likely to have major and long-lasting personal, public health, and economic consequences. While knowledge of disease mechanisms and therapies

acquired prior to the pandemic can inform us on how to manage patients with the neurologic manifestations of COVID-19, there is a critical need for improved understanding of specific COVID-19 disease mechanisms and development of therapies that target the neurologic morbidities of COVID-19. This current perspective reviews evidence for proposed disease mechanisms as they inform the neurologic management of COVID-19 in adult patients while also identifying areas in need of further research."

PLoS Med: [Cardiometabolic outcomes up to 12 months after COVID-19 infection. A matched cohort study in the UK](#) (19 July 2022)

"Background: Acute Coronavirus Disease 2019 (COVID-19) has been associated with new-onset cardiovascular disease (CVD) and diabetes mellitus (DM), but it is not known whether COVID-19 has long-term impacts on cardiometabolic outcomes. This study aimed to determine whether the incidence of new DM and CVDs are increased over 12 months after COVID-19 compared with matched controls.

Methods and findings: We conducted a cohort study from 2020 to 2021 analysing electronic records for 1,356 United Kingdom family practices with a population of 13.4 million. Participants were 428,650 COVID-19 patients without DM or CVD who were individually matched with 428,650 control patients on age, sex, and family practice and followed up to January 2022. Outcomes were incidence of DM and CVD. A difference-in-difference analysis estimated the net effect of COVID-19 allowing for baseline differences, age, ethnicity, smoking, body mass index (BMI), systolic blood pressure, Charlson score, index month, and matched set. Follow-up time was divided into 4 weeks from index date ("acute COVID-19"), 5 to 12 weeks from index date ("post-acute COVID-19"), and 13 to 52 weeks from index date ("long COVID-19"). Net incidence of DM increased in the first 4 weeks after COVID-19 (adjusted rate ratio, RR 1.81, 95% confidence interval (CI) 1.51 to 2.19) and remained elevated from 5 to 12 weeks (RR 1.27, 1.11 to 1.46) but not from 13 to 52 weeks overall (1.07, 0.99 to 1.16). Acute COVID-19 was associated with net increased CVD incidence (5.82, 4.82 to 7.03) including pulmonary embolism (RR 11.51, 7.07 to 18.73), atrial arrhythmias (6.44, 4.17 to 9.96), and venous thromboses (5.43, 3.27 to 9.01). CVD incidence declined from 5 to 12 weeks (RR 1.49, 1.28 to 1.73) and showed a net decrease from 13 to 52 weeks (0.80, 0.73 to 0.88). The analyses were based on health records data and participants' exposure and outcome status might have been misclassified.

Conclusions: In this study, we found that CVD was increased early after COVID-19 mainly from pulmonary embolism, atrial arrhythmias, and venous thromboses. DM incidence remained elevated for at least 12 weeks following COVID-19 before declining. People without preexisting CVD or DM who suffer from COVID-19 do not appear to have a long-term increase in incidence of these conditions."

Heart Rhythm: [Postural Orthostatic Tachycardia Syndrome as a Sequela of COVID-19](#) (16 July 2022)

"Postural Orthostatic Tachycardia Syndrome (POTS) is a complex, multisystem disorder characterized by orthostatic intolerance and tachycardia and may be triggered by viral infection. Recent reports indicate 2-14% of COVID-19 survivors develop POTS and 9-61% experience POTS-like symptoms, such as tachycardia, orthostatic intolerance, fatigue, and cognitive impairment within 6-8 months following a SARS-CoV-2 infection.

Pathophysiological mechanisms of Post-COVID-19 POTS are not well understood. Current hypotheses include autoimmunity related to SARS-CoV-2 infection, autonomic dysfunction, direct toxic injury by SARS-CoV-2 to the autonomic nervous system, and invasion of the central nervous system by SARS-CoV-2. Practitioners should actively assess for POTS in patients with post-acute COVID syndrome symptoms. Given symptoms of Post-COVID-19 POTS are predominantly chronic orthostatic tachycardia, lifestyle modifications in combination with the use of heart rate-lowering medications along with other pharmacotherapies should be considered. For example, ivabradine or beta-blockers in combination with compression stockings and increasing salt and fluid intake has shown potential. Treatment teams should be multidisciplinary, including physicians of various specialties, nurses, psychologists, and physiotherapists. Additionally, more resources to adequately care for this patient population are urgently needed given the increased demand for autonomic specialists and clinics since the start of the COVID-19 pandemic. Considering our limited understanding of Post-COVID-19 POTS, further research on topics such as its natural history, pathophysiological mechanisms, and ideal treatment is warranted. This review evaluates the current literature available on the associations between COVID-19 and POTS, possible mechanisms, patient assessment, treatments, and future directions to improving our understanding of Post-COVID-19 POTS."

Nat Commun: [Post-recovery COVID-19 and incident heart failure in the National COVID Cohort Collaborative \(N3C\) study](#) (15 July 2022)

"Cardiac involvement has been noted in COVID-19 infection. However, the relationship between post-recovery COVID-19 and development of de novo heart failure has not been investigated in a large, nationally representative population. We examined post-recovery outcomes of 587,330 patients hospitalized in the United States (257,075 with COVID-19 and 330,255 without), using data from the National COVID Cohort Collaborative study. Patients hospitalized with COVID-19 were older (51 vs. 46 years), more often male (49% vs. 42%), and less often White (61% vs. 69%). Over a median follow up of 367 days, 10,979 incident heart failure events occurred. After adjustments, COVID-19 hospitalization was associated with a 45% higher hazard of incident heart failure (hazard ratio = 1.45; 95% confidence interval: 1.39–1.51), with more pronounced associations among patients who were younger (P-interaction = 0.003), White (P-interaction = 0.005), or who had established cardiovascular

disease (P-interaction = 0.005). In conclusion, COVID-19 hospitalization is associated with increased risk of incident heart failure."

Sci Rep: [Hyperbaric oxygen therapy improves neurocognitive functions and symptoms of post-COVID condition: randomized controlled trial](#) (12 July 2022)

"Post-COVID-19 condition refers to a range of persisting physical, neurocognitive, and neuropsychological symptoms after SARS-CoV-2 infection. The mechanism can be related to brain tissue pathology caused by virus invasion or indirectly by neuroinflammation and hypercoagulability. This randomized, sham-control, double blind trial evaluated the effect of hyperbaric oxygen therapy (HBOT or HBO2 therapy) on post-COVID-19 patients with ongoing symptoms for at least 3 months after confirmed infection. Seventy-three patients were randomized to receive daily 40 session of HBOT (n = 37) or sham (n = 36). Follow-up assessments were performed at baseline and 1–3 weeks after the last treatment session. Following HBOT, there was a significant group-by-time interaction in global cognitive function, attention and executive function (d = 0.495, p = 0.038; d = 0.477, p = 0.04 and d = 0.463, p = 0.05 respectively). Significant improvement was also demonstrated in the energy domain (d = 0.522, p = 0.029), sleep (d = – 0.48, p = 0.042), psychiatric symptoms (d = 0.636, p = 0.008), and pain interference (d = 0.737, p = 0.001). Clinical outcomes were associated with significant improvement in brain MRI perfusion and microstructural changes in the supramarginal gyrus, left supplementary motor area, right insula, left frontal precentral gyrus, right middle frontal gyrus, and superior corona radiate. These results indicate that HBOT can induce neuroplasticity and improve cognitive, psychiatric, fatigue, sleep and pain symptoms of patients suffering from post-COVID-19 condition. HBOT's beneficial effect may be attributed to increased brain perfusion and neuroplasticity in regions associated with cognitive and emotional roles."

Appl Econ Lett: [The impact of Long COVID on the UK workforce](#) (06 July 2022)

"COVID-19 is more likely to lead to Long COVID among persons of working age. We outline the first estimates of the impact of Long Covid on employment in the UK. Using estimates of cumulative prevalence of Long COVID, activity-limiting Long COVID in the working-age population and of economic inactivity and job loss resulting from Long COVID, we provide evidence of the profound impact of Long COVID on national labour supply. Since the start of the pandemic, cumulatively 2.9 million people of working age (7% of the total) in the UK have had, or still have, Long COVID. This figure will continue to rise due to very high infection rates in the Omicron wave. Since the beginning of the pandemic, economic inactivity due to long-term sickness has risen by 120,900 among the working-age population, fuelling the UK's current labour shortage. An estimated 80,000 people have left employment due to Long COVID. We argue that governments need to tackle the twin challenges to public health and labour supply and provide employment protection and financial support for individuals and firms affected by Long COVID."

Pregnancy and Postpartum Period

Journal Articles

NEJM: [Maternal Vaccination and Risk of Hospitalization for Covid-19 among Infants](#) (14 July 2022)

"Background: Infants younger than 6 months of age are at high risk for complications of coronavirus disease 2019 (Covid-19) and are not eligible for vaccination. Transplacental transfer of antibodies against severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) after maternal Covid-19 vaccination may confer protection against Covid-19 in infants.

Methods: We used a case-control test-negative design to assess the effectiveness of maternal vaccination during pregnancy against hospitalization for Covid-19 among infants younger than 6 months of age. Between July 1, 2021, and March 8, 2022, we enrolled infants hospitalized for Covid-19 (case infants) and infants hospitalized without Covid-19 (control infants) at 30 hospitals in 22 states. We estimated vaccine effectiveness by comparing the odds of full maternal vaccination (two doses of mRNA vaccine) among case infants and control infants during circulation of the B.1.617.2 (delta) variant (July 1, 2021, to December 18, 2021) and the B.1.1.259 (omicron) variant (December 19, 2021, to March 8, 2022).

Results: A total of 537 case infants (181 of whom had been admitted to a hospital during the delta period and 356 during the omicron period; median age, 2 months) and 512 control infants were enrolled and included in the analyses; 16% of the case infants and 29% of the control infants had been born to mothers who had been fully vaccinated against Covid-19 during pregnancy. Among the case infants, 113 (21%) received intensive care (64 [12%] received mechanical ventilation or vasoactive infusions). Two case infants died from Covid-19; neither infant's mother had been vaccinated during pregnancy. The effectiveness of maternal vaccination against hospitalization for Covid-19 among infants was 52% (95% confidence interval [CI], 33 to 65) overall, 80% (95% CI, 60 to 90) during the delta period, and 38% (95% CI, 8 to 58) during the omicron period. Effectiveness was 69% (95% CI, 50 to 80) when maternal vaccination occurred after 20 weeks of pregnancy and 38% (95% CI, 3 to 60) during the first 20 weeks of pregnancy.

Conclusions: Maternal vaccination with two doses of mRNA vaccine was associated with a reduced risk of hospitalization for Covid-19, including for critical illness, among infants younger than 6 months of age."

Obstet Gynecol: [High-Dose Inhaled Nitric Oxide for the Treatment of Spontaneously Breathing Pregnant Patients With Severe Coronavirus Disease 2019 \(COVID-19\) Pneumonia](#) (07 July 2022)

"OBJECTIVE: To evaluate whether the use of inhaled nitric oxide (iNO)₂₀₀ improves respiratory function.

METHODS: This retrospective cohort study used data from pregnant patients hospitalized with severe bilateral coronavirus disease 2019 (COVID-19) pneumonia at four teaching hospitals between March 2020 and December 2021. Two cohorts were identified: 1) those receiving standard of care alone (SoC cohort) and 2) those receiving iNO₂₀₀ for 30 minutes twice daily in addition to standard of care alone (iNO₂₀₀ cohort). Inhaled nitric oxide, as a novel therapy, was offered only at one hospital. The prespecified primary outcome was days free from any oxygen supplementation at 28 days postadmission. Secondary outcomes were hospital length of stay, rate of intubation, and intensive care unit (ICU) length of stay. The multivariable-adjusted regression analyses accounted for age, body mass index, gestational age, use of steroids, remdesivir, and the study center.

RESULTS: Seventy-one pregnant patients were hospitalized for severe bilateral COVID-19 pneumonia: 51 in the SoC cohort and 20 in the iNO₂₀₀ cohort. Patients receiving iNO₂₀₀ had more oxygen supplementation-free days (iNO₂₀₀: median [interquartile range], 24 [23–26] days vs standard of care alone: 22 [14–24] days, $P=.01$) compared with patients in the SoC cohort. In the multivariable-adjusted analyses, iNO₂₀₀ was associated with 63.2% (95% CI 36.2–95.4%; $P<.001$) more days free from oxygen supplementation, 59.7% (95% CI 56.0–63.2%; $P<.001$) shorter ICU length of stay, and 63.6% (95% CI 55.1–70.8%; $P<.001$) shorter hospital length of stay. No iNO₂₀₀-related adverse events were reported.

CONCLUSION: In pregnant patients with severe bilateral COVID-19 pneumonia, iNO₂₀₀ was associated with a reduced need for oxygen supplementation and shorter hospital stay."

Pediatric Population

News in Brief

Pfizer's COVID vaccine is the first to be granted FDA approval (beyond EUA) for adolescents 12-15 years old ([Pfizer](#)).

"Adenovirus common in kids with unexplained acute hepatitis, studies show" ([CIDRAP](#); see also: [NEJM study #1](#) and [NEJM study #2](#)).

Journal Articles

JAMA Netw Open: [Incidence and Relative Risk of COVID-19 in Adolescents and Youth Compared With Older Adults in 19 US States, Fall 2020](#) (15 July 2022)

"Question: How do incidence and relative risk of contracting COVID-19 from the original wild-type SARS-CoV-2 strain in adolescents and youth compare with that in older adults in the US?

Findings: Results of this cross-sectional study using state health department data from the start of the pandemic through fall 2020 indicate that, in 16 of the 19 states examined, the incidence rate and relative risk of COVID-19 infection from wild-type SARS-CoV-2 were significantly greater in adolescents and youth than in older adults. For example, in Florida, the incidence rate in adolescents and youth was 0.055 compared with 0.028 in older adults—adolescents and youth had 1.94 times the risk of contracting COVID-19 compared with older adults.

Meaning: These results suggest that, contrary to reports from Europe and Asia, infection rates and relative risk among US adolescents and youth exceeded that in older adults from the start of the COVID-19 pandemic through fall 2020, before vaccines were available."

MMWR: [Safety Monitoring of COVID-19 mRNA Vaccine First Booster Doses Among Persons Aged ≥12 Years with Presumed Immunocompromise Status — United States, January 12, 2022–March 28, 2022](#) (15 July 2022)

"What is already known about this topic? Additional doses of COVID-19 vaccine are recommended for immunocompromised persons, and 518,113 fourth doses were presumed administered to this population during January–March, 2022.

What is added by this report? Among presumed immunocompromised persons aged ≥12 years, local and systemic reactions were less frequently reported to v-safe after mRNA booster (dose 4) than after primary series dose 3. Only 17 serious adverse events were reported to VAERS.

What are the implications for public health practice? Serious adverse events after mRNA booster (dose 4) are rare. Immunocompromised persons aged ≥12 years should receive a first booster ≥3 months after a 3-dose primary COVID-19 vaccination series and a second booster ≥4 months after the first booster."

JAMA Netw Open: [Long-term Immune Response to SARS-CoV-2 Infection Among Children and Adults After Mild Infection](#) (13 July 2022)

"Question: What are the long-term features of the immune response to SARS-CoV-2 in children compared with adults?

Findings: In this cohort study of 252 family clusters with COVID-19, anti-SARS-CoV-2 spike receptor-binding domain IgG persisted until 12 months after infection in all age groups, showing significant higher antibody peaks for younger individuals at every follow-up time point. Children younger than 3 years were found to develop higher levels of binding antibodies compared with adults older than 18 years.

Meaning: This study provided novel insights into the long-term features of the immune response to COVID-19 for different age classes, which could help in optimizing future COVID-19 vaccination strategies and prevention policies."

Pediatrics: [Guidance for Cardiopulmonary Resuscitation of Children With Suspected or Confirmed COVID-19](#) (12 July 2022)

"This document aims to provide guidance to healthcare workers for the provision of basic and advanced life support to children and neonates with suspected or confirmed COVID-19. It aligns with the 2020 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care while providing strategies for reducing risk of transmission of SARS-CoV-2 to healthcare providers. Patients with suspected or confirmed COVID-19 and cardiac arrest should receive chest compressions and defibrillation, when indicated, as soon as possible. Due to the importance of ventilation during pediatric and neonatal resuscitation, oxygenation and ventilation should be prioritized. All CPR events should therefore be considered aerosol-generating procedures (AGPs). Thus, personal protective equipment (PPE) appropriate for AGPs (including N95 respirators or an equivalent) should be donned prior to resuscitation and high-efficiency particulate air (HEPA) filters should be utilized. Any personnel without appropriate PPE should be immediately excused by providers wearing appropriate PPE. Neonatal resuscitation guidance is unchanged from standard algorithms except for specific attention to infection prevention and control. In summary, healthcare personnel should continue to reduce the risk of SARS-CoV-2 transmission through vaccination and use of appropriate PPE during pediatric resuscitations. Healthcare organizations should ensure the availability and appropriate use of PPE. As delays or withheld CPR increases the risk to patients for poor clinical outcomes, children and neonates with suspected or confirmed COVID-19 should receive prompt, high-quality CPR in accordance with evidence-based guidelines."

JAMA Pediatr: [Global Changes in Child and Adolescent Physical Activity During the COVID-19 Pandemic: A Systematic Review and Meta-analysis](#) (11 July 2022)

"Question: To what extent has the COVID-19 pandemic affected the global physical activity levels of children and adolescents?

Findings: In this systematic review and meta-analysis of 22 international longitudinal studies that included 14 216 children 18 years and younger, pooled estimates revealed a decrease

of 17 minutes per day in children's moderate-to-vigorous physical activity from prepandemic to during the COVID-19 pandemic.

Meaning: Restrictions implemented during the COVID-19 pandemic have affected children's levels of physical activity, particularly moderate-to-vigorous physical activity; children's movement behaviors should be at the forefront of pandemic recovery efforts."

Healthcare Workers

Journal Articles

MMWR: [Workplace Perceptions and Experiences Related to COVID-19 Response Efforts Among Public Health Workers — Public Health Workforce Interests and Needs Survey, United States, September 2021–January 2022](#) (22 July 2022)

"What is already known about this topic? The COVID-19 pandemic has strained many essential frontline professionals, including public health workers.

What is added by this report? The 2021 Public Health Workforce Interests and Needs Survey recorded the perspectives of the governmental public health workforce. During March 2020–January 2022, 72% of the workforce fully or partially served in a COVID-19 response role. Apart from funding, 51% of respondents cited a need for additional staff capacity to respond to COVID-19. Approximately 40% of the workforce intends to leave their jobs within the next 5 years.

What are the implications for public health practice? Purposeful succession planning and focused attention on recruitment and retention that promotes diversity will be critical as the workforce rebuilds while the COVID-19 pandemic evolves."

MMWR: [Symptoms of Mental Health Conditions and Suicidal Ideation Among State, Tribal, Local, and Territorial Public Health Workers — United States, March 14–25, 2022](#) (22 July 2022)

"What is already known about this topic? In 2021, state, tribal, local, and territorial (STLT) public health workers reported high levels of symptoms of at least one mental health condition (depression, anxiety, or posttraumatic stress disorder [PTSD]).

What is added by this report? In a 2022 survey of 26,069 STLT public health workers, higher PTSD prevalence was associated with more weekly work hours and more time spent on COVID-19 response activities. Most (75.5%) respondents did not think their employer increased mental health support.

What are the implications for public health practice? To support the mental health of public health workers, public health agencies can modify work-related factors, including making organizational changes for emergency responses and facilitating access to mental health resources and services."

JAMA Netw Open: [Childcare Stress, Burnout, and Intent to Reduce Hours or Leave the Job During the COVID-19 Pandemic Among US Health Care Workers](#) (18 July 2022)

"Question: Is high childcare stress (CCS) associated with burnout, intent to reduce clinical hours, and intent to leave the job among US health care workers during the COVID-19 pandemic?

Findings: In this survey study, with 58 408 respondents conducted between April and December 2020, high CCS was associated with 80% greater odds of burnout in all health care workers.

Meaning: These findings suggest there is an association between reporting high CCS and burnout, and programs to reduce CCS may be beneficial for workers and health systems."

Am J Infect Control: [Associations among infection prevention professionals' mental/physical health, lifestyle behaviors, shift length, race, and workplace wellness support during COVID-19](#) (13 July 2022)

"Background: COVID-19 added stress to infection prevention professionals' (IPs) work-life that may have impacted their well-being. This study aimed to describe IPs' mental and physical health and lifestyle behaviors during the pandemic and their associations with IP role, perceived worksite wellness support, shift length, and race and/or ethnicity.

Methods: A random sample of Association for Professionals in Infection Control and Epidemiology members (6,000) were emailed a survey assessing mental and physical well-being, lifestyle behaviors, and perceived worksite wellness support.

Results: A total of 926 IPs responded (15% response rate). Few met guidelines for sleep (34.1%), physical activity (18.8%), and fruit and vegetable consumption (7.3%). Rates of depression, anxiety, and burnout were 21.5%, 29.8%, and 65%. Front line and practicing IPs and IP administrators and directors had more negative mental health impacts than IPs in other roles. IPs with organizational wellness support were less likely to report negative COVID-19 impacts. IPs working 9-11+ hours/day were more likely to report worsening physical and mental health due to COVID-19. There were no significant differences in odds of negative COVID-19 impacts on lifestyle behaviors between white and racial and ethnically diverse IPs.

Conclusions: IPs who worked shorter shifts and had more organizational wellness support had better well-being outcomes. Organizations must fix system issues that result in poor health and invest in workforce wellness."

Other Infectious Diseases and Public Health Threats

News in Brief

Domestic

CDC HAN: "Recent Reports of Human Parechovirus (PeV) in the United States—2022" ([CDC](#)).

"5 things to know about the brain-eating amoeba that infected a swimmer in Iowa" ([NPR](#)).

Florida: "Health officials issue mosquito borne illness advisory following confirmation of one dengue case" ([FLDH](#)).

"N.Y. state detects polio case, first in the U.S. since 2013" ([STAT](#)).

International

"China reports one human infection of bubonic plague in northwestern region of Ningxia" ([Reuters](#)).

"Vietnam tells hospitals to prepare as dengue fever cases surge" ([Reuters](#)).

"In Africa, 63% jump in diseases spread from animals to people seen in last decade" ([WHO](#)).

"Why world's first malaria shot won't reach millions of children who need it" ([Reuters](#)).

"Ghana confirms its first outbreak of highly infectious Marburg virus" ([Reuters](#)).

"Tanzania MOH: 13 patients with unknown hemorrhagic disease in Lindi - 3 deaths" ([Avian Flu Diary](#); see also: [FluTracker thread](#)).

Other Issues

"How hot is too hot for the human body? A study of healthy volunteers found that the combination of heat and humidity gets dangerous faster than many people realize" ([Conversation](#)).

"'Time bomb' lead pipes will be removed. But first water utilities have to find them"([NPR](#)).

Journal Articles

MMWR: [Influenza Activity and Composition of the 2022–23 Influenza Vaccine — United States, 2021–22 Season](#) (22 July 2022)

"What is already known about this topic? CDC collects, compiles, and analyzes data on U.S. influenza activity and viruses.

What is added by this report? The severity of the 2021–22 influenza season was low, with two waves of influenza A activity. Influenza activity continued from October 2021 through mid-June 2022, with A(H3N2) viruses predominating throughout the season. This report also describes the composition of the Northern Hemisphere 2022–23 influenza vaccine.

What are the implications for public health practice? Because of the atypical timing and duration of influenza activity, providers and patients should consider influenza infection as a cause of respiratory illness. Testing for seasonal influenza and monitoring for novel viruses, especially avian A(H5N1) and swine viruses, should continue year-round. Receiving a seasonal influenza vaccine each year remains the best way to protect against seasonal influenza and its potentially severe consequences."

MMWR: [Public Health Surveillance and Reporting for Human Toxoplasmosis — Six States, 2021](#) (15 July 2022)

"What is already known about this topic? Toxoplasmosis, a zoonotic parasitic disease that can result in severe adverse outcomes, is not a nationally notifiable illness in the United States; no national level surveillance data are available.

What is added by this report? In 2021, toxoplasmosis was reportable in eight states. Among six states that participated in a surveillance evaluation, case definitions varied considerably, and a need for development and implementation of a standardized case definition was identified.

What are the implications for public health practice? Implementing a standardized case definition would help ensure that cases are counted consistently. Toxoplasmosis surveillance could increase awareness among physicians and public health personnel but is dependent upon health department resources. Identifying newly acquired cases is important for surveillance but is challenging because most acute cases among immunocompetent persons (including pregnant women) are asymptomatic, disease among immunocompromised persons are likely reactivations of latent disease, and congenital infections might not manifest until later in life."

Special Topic: Monkeypox

News in Brief

"WHO: 14,000 monkeypox cases worldwide, 5 deaths" ([CIDRAP](#)).

"WHO considers declaring monkeypox a global public health emergency" ([CIDRAP](#)).

"With monkeypox spreading globally, many experts believe the virus can't be contained" ([STAT](#)).

"U.S. messaging on monkeypox is deeply flawed — Officials seem unwilling to be direct about who is most at risk of the disease" ([Atlantic](#)).

"Public health clinics running out of monkeypox vaccine as lines form and systems crash" ([USA Today](#)).

"Fighting monkeypox, sexual health clinics are underfunded and ill-equipped" ([KHN](#)).

"Bay Area man infected with COVID-19, monkeypox at the same time" ([NBC BA](#)).

Journal Articles

NEJM: [Monkeypox Virus Infection in Humans across 16 Countries — April–June 2022](#) (21 July 2022)

BACKGROUND Before April 2022, monkeypox virus infection in humans was seldom reported outside African regions where it is endemic. Currently, cases are occurring worldwide. Transmission, risk factors, clinical presentation, and outcomes of infection are poorly defined.

METHODS We formed an international collaborative group of clinicians who contributed to an international case series to describe the presentation, clinical course, and outcomes of polymerase-chain-reaction–confirmed monkeypox virus infections.

RESULTS We report 528 infections diagnosed between April 27 and June 24, 2022, at 43 sites in 16 countries. Overall, 98% of the persons with infection were gay or bisexual men, 75% were White, and 41% had human immunodeficiency virus infection; the median age was 38 years. Transmission was suspected to have occurred through sexual activity in 95% of the persons with infection. In this case series, 95% of the persons presented with a rash (with 64% having <10 lesions), 73% had anogenital lesions, and 41% had mucosal lesions (with 54 having a single genital lesion). Common systemic features preceding the rash included fever (62%), lethargy (41%), myalgia (31%), and headache (27%); lymphadenopathy was also common (reported in 56%). Concomitant sexually transmitted infections were reported in 109 of 377 persons (29%) who were tested. Among the 23

persons with a clear exposure history, the median incubation period was 7 days (range, 3 to 20). Monkeypox virus DNA was detected in 29 of the 32 persons in whom seminal fluid was analyzed. Antiviral treatment was given to 5% of the persons overall, and 70 (13%) were hospitalized; the reasons for hospitalization were pain management, mostly for severe anorectal pain (21 persons); soft-tissue superinfection (18); pharyngitis limiting oral intake (5); eye lesions (2); acute kidney injury (2); myocarditis (2); and infection-control purposes (13). No deaths were reported.

CONCLUSIONS In this case series, monkeypox manifested with a variety of dermatologic and systemic clinical findings. The simultaneous identification of cases outside areas where monkeypox has traditionally been endemic highlights the need for rapid identification and diagnosis of cases to contain further community spread."

MMWR: [Rapid Diagnostic Testing for Response to the Monkeypox Outbreak — Laboratory Response Network, United States, May 17–June 30, 2022](#) (15 July 2022)

"What is already known on this topic? The Laboratory Response Network (LRN) includes U.S. laboratories validated to perform the non-variola Orthopoxvirus (NVO) assay.

What is added by this report? During May 17–June 30, 2022, LRN laboratories tested 2,009 specimens from patients with suspected monkeypox. Among these, 730 (36%) specimens from 395 patients were positive for NVO. Specimens from 159 persons with NVO-positive results were confirmed by CDC to be monkeypox; confirmatory testing is pending for 236. LRN laboratories have increased testing capacity from 8,000 per week in June because of NVO assay updates.

What are the implications for public health practice? LRN laboratories' rapid results enable prompt patient treatment and prevention of further transmission. Expansion of testing to five large national laboratories will increase ease of access to testing."

Euro Surveill: [Frequent detection of monkeypox virus DNA in saliva, semen, and other clinical samples from 12 patients, Barcelona, Spain, May to June 2022](#) (14 July 2022)

"A monkeypox (MPX) outbreak has expanded worldwide since May 2022. We tested 147 clinical samples collected at different time points from 12 patients by real-time PCR. MPX DNA was detected in saliva from all cases, sometimes with high viral loads. Other samples were frequently positive: rectal swab (11/12 cases), nasopharyngeal swab (10/12 cases), semen (7/9 cases), urine (9/12 cases) and faeces (8/12 cases). These results improve knowledge on virus shedding and the possible role of bodily fluids in disease transmission."

Emerg Infect Dis: [Epidemiologic Features and Control Measures during Monkeypox Outbreak, Spain, June 2022](#) (12 July 2022)

"During June 2022, Spain was one of the countries most affected worldwide by a multicountry monkeypox outbreak with chains of transmission and without identified links to disease-endemic countries. We provide epidemiologic features of cases reported in Spain and the coordinated measures taken to respond to this outbreak."

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